1. (Previously amended) A plasma lamp comprising:

a source of radio wave radiation;

a waveguide structure for coupling said radio wave radiation to a plasma discharge-forming medium so as to excite a plasma discharge, said waveguide structure being composed of solid dielectric material; and

a housing for retaining said plasma discharge-forming medium without a light-transmissive bulb envelope and wherein said housing and said waveguide structure provide a single, integrated structure.

2. (Original) A plasma lamp as recited in Claim 1, wherein said waveguide structure is a resonant structure which supports at least one resonant mode of said radio wave radiation.

3. (Cancelled).

4. (Previously amended) A plasma lamp as recited in claim 1, wherein said housing is comprised of ceramic material.

5. (Original) A plasma lamp as recited in claim 4, wherein said ceramic material includes alumina.

6. (Previously amended) A plasma lamp comprising:

a source of radio wave radiation;

a waveguide structure for coupling said radio wave radiation to a plasma discharge-forming medium so as to excite a plasma discharge said waveguide structure being composed of a ceramic material; and

a housing for said plasma discharge-forming medium

wherein said housing and said source of radio wave radiation are positioned at substantially opposite ends of said waveguide structure and wherein said housing and said waveguide structure provide a single, integrated structure.

7. (Original) A plasma lamp as recited in claim 6, wherein said waveguide structure is a resonant structure which supports at least one resonant mode of said radio wave radiation.

8. (Cancelled).

9. (Previously amended) A plasma lamp as recited in claim 6, wherein said housing is comprised of another ceramic material.

10. (Original) A plasma lamp as recited in claim 9, wherein said other ceramic material includes alumina.

11. (Previously amended) A plasma lamp as recited in claim 6, wherein said ceramic material includes alumina.

12. (Previously amended) A plasma lamp as recited in claim 6, wherein said ceramic material includes titanium dioxide.

13. (Previously amended) A plasma lamp as recited in claim 6, wherein said ceramic material includes barium neodymium titinate.

14. (Previously amended) A plasma lamp as recited in claim 9, wherein said other ceramic material is the same material as said ceramic material.

15. (Currently amended) A plasma lamp comprising:

a source of radio wave radiation;

a waveguide structure for coupling said radio wave radiation to a plasma discharge-forming medium so as to excite a plasma discharge wherein said waveguide structure is a resonant structure which supports at least one resonant mode of said radio wave radiation;

a housing for said plasma discharge-forming medium~~; and~~,

wherein said waveguide structure is composed of a first ceramic material and said housing is formed from a second ceramic material and includes a window that is transmissive of visible light wherein said housing and said waveguide structure are integrated into a single structure.

16. (Original) A plasma lamp as recited in claim 15, wherein said window is formed from sapphire.

17. (Previously amended) A plasma lamp as recited in claim 15, wherein said housing is positioned at an end of said waveguide structure opposite that of the source of radio wave radiation.

18. (Cancelled).

19. (Original) A plasma lamp as recited in claim 15, wherein said second ceramic material includes alumina.

20. (Original) A plasma lamp as recited in claim 15, wherein said first ceramic material includes alumina.

21. (Original) A plasma lamp as recited in claim 15, wherein said first ceramic material includes titanium dioxide.

22. (Original) A plasma lamp as recited in claim 15, wherein said first ceramic material includes barium neodymium titinate.

23. (Previously amended) A plasma lamp as recited in claim 15, wherein said second ceramic material is the same material as said first ceramic material.

24. (Previously amended) A plasma lamp comprising:

a housing containing a plasma discharge-forming medium, said housing being of ceramic material and including a window that is transmissive of visible light produced by said plasma discharge wherein said window comprises sapphire;

a source of electromagnetic energy; and

means for coupling said electromagnetic energy to the plasma discharge-forming medium so as to excite a plasma discharge.

25. (Cancelled).

26. (Original) A plasma lamp as recited in claim 24, wherein said ceramic material comprises alumina.

27. (Previously amended) A plasma lamp as recited in claim 24, wherein the source of electromagnetic energy and the housing are within the ceramic material as an integrated

structure.

28.(Original) A plasma lamp as recited in claim 27, wherein said source of electromagnetic energy comprises electrical coils.

29.(Original) A plasma lamp as recited in claim 27, wherein said source of electromagnetic energy comprises an antenna.

30.(Previously presented) A plasma lamp as recited in claim 28, further comprising segments of ferrite adjacent to the electrical coils.

31.(Previously presented) A plasma lamp as recited in claim 24, wherein, said window is tapered and conical.

32.(Previously presented) A plasma lamp comprising:

a source of radio wave radiation;

a waveguide structure for coupling said radio wave radiation to a plasma discharge-forming medium so as to excite a plasma discharge;

a housing for said plasma discharge-forming medium~~;~~ ~~and~~,

wherein said waveguide structure is composed of a first ceramic material and said housing is formed from a second ceramic material and includes a window that is transmissive of visible light wherein said window comprises sapphire.

33. (Previously presented) A plasma lamp as recited in claim 32, wherein said waveguide structure is a resonant structure which supports at least one resonant mode of said radio wave radiation.

34. (Previously presented) A plasma lamp as recited in claim 32, wherein said housing and said waveguide structure are integrated into a single structure.

35. (Previously presented) A plasma lamp as recited in claim 32, wherein said second ceramic material includes alumina.

36. (Previously presented) A plasma lamp as recited in claim 32, wherein said first ceramic material includes alumina.

37. (Previously presented) A plasma lamp as recited in claim 32, wherein said first ceramic material includes titanium dioxide.

38. (Previously presented) A plasma lamp as recited in claim 32, wherein said first ceramic material includes barium neodymium titinate.

39. (Previously presented) A plasma lamp as recited in claim 32, wherein said second ceramic material is the same material as said first ceramic material.

40. (Previously presented) A plasma lamp comprising:

a housing having a window sealed to said housing for containing a plasma discharge-forming medium, said housing

being of ceramic material and said window being transmissive of visible light produced by said plasma discharge;

a source of electromagnetic energy wherein the source of electromagnetic energy and the housing are within the ceramic material, as an integrated structure; and

means for coupling said electromagnetic energy to the plasma discharge-forming medium so as to excite a plasma discharge.

41.(Previously presented) A plasma lamp as recited in claim 40, wherein said window comprises sapphire.

42.(Previously presented) A plasma lamp as recited in claim 40, wherein said ceramic material comprises alumina.

43.(Previously presented) A plasma lamp as recited in claim 40, wherein said source of electromagnetic energy comprises electrical coils.

44.(Previously presented) A plasma lamp as recited in claim 40, wherein said source of electromagnetic energy comprises an antenna.

45.(Previously presented) A plasma lamp as recited in claim 43, further comprising segments of ferrite adjacent to the electrical coils.

46.(Previously presented) A plasma lamp as recited in claim 40, wherein said window is tapered and conical.

47.(Previously presented) A plasma lamp as recited in claim 1, wherein said housing includes a window that is

transmissive of visible light.

48.(Previously presented) A plasma lamp as recited in claim 47, wherein said window is sapphire.

49.(Previously presented) A plasma lamp as recited in claim 47, wherein said window is tapered and conical.

50.(Previously presented) A plasma lamp as recited in claim 1, wherein said waveguide structure has a cross-section of varying dimension for matching impedance of the waveguide to that of the housing.

51.(Previously presented) A plasma lamp as recited in claim 1, further comprising alumina deposited along an inner boundary of the housing.

52.(Previously presented) A plasma lamp as recited in claim 1, wherein an interior of the housing is coated with a film of MgO.

53.(Previously presented) A plasma lamp as recited in claim 6, wherein said waveguide structure has a cross-section of varying dimension for matching impedance of the waveguide to that of the housing.

54.(Previously presented) A plasma lamp comprising:

a source of radio wave radiation;

a waveguide structure for coupling said radio wave radiation to a plasma discharge-forming medium so as to excite a plasma discharge, wherein said waveguide structure is a resonant structure which supports at least one resonant mode

of said radio wave radiation and said waveguide structure being composed of solid dielectric material; and

a housing for said plasma discharge-forming medium, wherein said housing is substantially enclosed by said waveguide structure.

55. (Previously presented) A plasma lamp as recited in claim 54, further comprising a bulb envelope for retaining the plasma discharge-forming medium.

56. (Previously presented) A plasma lamp as recited in claim 55, wherein said bulb is comprised of quartz.

57. (Previously presented) A plasma lamp as recited in claim 55, wherein said bulb is comprised of sapphire.

58. (Previously presented) A plasma lamp as recited in claim 54, wherein said gas housing is comprised of ceramic.

59. (Previously presented) A plasma lamp as recited in claim 58, wherein said ceramic includes alumina.

60. (Previously presented) A plasma lamp as recited in claim 58, wherein said ceramic includes titanium dioxide.

61. (Previously presented) A plasma lamp as recited in claim 58, wherein said ceramic includes barium neodymium titinate.

62. (New) A lamp comprising:

a waveguide having a body comprising a dielectric material, said waveguide configured to be connected to an energy source for receiving electromagnetic energy; and

a bulb coupled to the waveguide and containing a gas-fill that emits light when receiving the electromagnetic energy from the waveguide.

63. (New) The lamp of claim 62, wherein the body of the waveguide includes an outer coating comprising an electrically conductive material.

64. (New) The lamp of claim 62, wherein the bulb comprises a cavity in the body of the waveguide, and a window coupled to and covering the cavity.

65. (New) The lamp of claim 64, wherein the window is substantially transparent to the emitted light.

66. (New) The lamp of claim 64, wherein the window is comprised of sapphire.

67. (New) The lamp of claim 64, wherein the window comprises a focusing lens.

68. (New) The lamp of claim 62, wherein the body of the waveguide includes a cavity, and the bulb is at least in part positioned in the cavity.

69. (New) The lamp of claim 68, wherein the bulb comprises a ceramic enclosure coupled to a sapphire window.

70.(New) The lamp of claim 68, wherein the body of the waveguide includes a main part and a protrusion from the main part, and the cavity is positioned in the protrusion.

71.(New) The lamp of claim 64, wherein the body of the waveguide includes a main part and a protrusion from the main part, and the cavity is positioned in the protrusion.

72.(New) The lamp of claim 62, further comprising a first energy feed coupled to the waveguide for receiving the electromagnetic energy.

73.(New) The lamp of claim 62, wherein the light is visible, infrared, or ultra violet-light.

74.(New) The lamp of claim 62, wherein the dielectric material has a dielectric constant greater than approximately 2.0.

75.(New) The lamp of claim 62, wherein the electromagnetic energy has a frequency between about 0.5 and about 10 GHz.

76.(New) The lamp of claim 62, wherein the walls of the bulb are at least partially reflective of the light.

77.(New) The lamp of claim 62, wherein the walls of the bulb are shaped to reflect the light towards the window.

78.(New) The lamp of claim 62, wherein the walls of the bulb comprise a dielectric material.

79.(New) The lamp of claim 62, wherein the dielectric material is a ceramic.

80.(New) The lamp of claim 62, wherein the walls of the bulb thermally isolate the bulb from the waveguide.

81.(New) The lamp of claim 62, wherein the window and the walls of the bulb have approximately equal thermal expansion coefficients.

82.(New) The lamp of claim 63, wherein the outer coating of the waveguide is thermally conductive.

83.(New) The lamp of claim 62, further comprising a heat sink connected to an outer surface of the waveguide.

84.(New) The lamp of claim 62, wherein the waveguide has a rectangular prism-like shape.

85.(New) The lamp of claim 62, wherein the waveguide has cylindrical prism-like shape.

86.(New) The lamp of claim 62, further comprising an energy feed coupled to the waveguide for receiving the electromagnetic energy, wherein a positive force mechanism maintains constant contact between the first energy feed and the waveguide.

87.(New) The lamp of claim 62, wherein the energy source is thermally isolated from the waveguide and the bulb.

88. (New) The lamp of claim 62, wherein the gas-fill comprises a noble gas and a metal halide.

89. (New) The lamp of claim 62, further comprising a thermal isolation layer disposed between the bulb and the waveguide.

90. (New) The lamp of claim 62, wherein an electromagnetic field resonates within the waveguide and includes at least one resonant maximum.

91. (New) The lamp of claim 90, further comprising a first energy feed coupled to the waveguide for receiving the electromagnetic energy, wherein the bulb and the first energy feed are proximate to one of the at least one resonant maximum.

92. (New) The lamp of claim 90, further comprising a first energy feed coupled to the waveguide for receiving the electromagnetic energy, wherein the electromagnetic energy includes at least two resonant maxima and the first energy feed is positioned at a first maximum of the at least two resonant maxima and the bulb is positioned at a second maximum of the at least two resonant maxima.

93. (New) The lamp of claim 90, further comprising first and second energy feeds coupled to the waveguide for receiving the electromagnetic energy, wherein the electromagnetic field includes at least one resonant maxima and the bulb and the first energy feed are proximate to one of the at least one resonant maximum.

94.(New) The lamp of claim 90, further comprising the energy source and a feedback mechanism coupled between the waveguide and the energy source, wherein the feedback mechanism samples the electromagnetic field within the waveguide, transmits the sampled field to the energy source, and the energy source adjusts its delivery of electromagnetic energy to maximize the electromagnetic field detected by the feedback mechanism.

95.(New) The lamp of claim 94, further comprising a first energy feed coupled between the energy source and the waveguide, wherein the electromagnetic energy includes at least one resonant maximum and the first energy feed is positioned approximately at a maximum of the at least one resonant maximum and the bulb is positioned approximately at a maximum of the at least one resonant maximum.

96.(New) The lamp of claim 62 further comprising the energy source.

97.(New) A lamp comprising:

first and second energy feeds for receiving electromagnetic energy from an energy source;

a waveguide having a body comprising a dielectric material, said waveguide being coupled to and for receiving electromagnetic energy from the first energy feed and the second energy feed, having a bulb cavity, and an electrically and thermally conductive coating on the surfaces of the body except the surfaces defining the cavity;

a bulb containing a gas-fill, said bulb being disposed in the bulb cavity and comprising a window, the window being substantially transparent to emitted light, and

an outer wall, the outer wall being hermetically coupled with the window, shaped to direct the light towards the window, and having a thermal expansion coefficient approximately equal to the thermal expansion coefficient of the window, wherein the window and the outer wall define an envelope of the bulb to contain the gas-fill; and

a heat sink coupled to the surface of the waveguide.

98.(New) The lamp of claim 97, wherein the waveguide is configured to contain resonant electromagnetic energy that comprises at least three resonant maxima, the first energy feed being proximate to a first resonant maximum, the second energy feed being proximate to a second resonant maximum, and the cavity being proximate to a third resonant maximum.

99.(New) A lamp comprising:

a high frequency electromagnetic energy source having an output port and a feedback port;

an energy feed coupled to the output port to receive electromagnetic energy from the energy source;

a waveguide having a body comprising a dielectric material, said waveguide being coupled to and receiving electromagnetic energy from the energy feed, having a bulb cavity in the body and a reflective outer coating;

a feedback mechanism coupled between the feedback port and the waveguide, the feedback mechanism for sampling the electromagnetic energy within the waveguide and for communicating amplitude and phase of the electromagnetic energy to the energy source, the energy source adjusting its output of electromagnetic energy to maximize the electromagnetic energy detected by the feedback mechanism;

a bulb containing a gas-fill that produces light when excited by the electromagnetic energy, said bulb being disposed in the cavity; and

a heat sink coupled to a side of the waveguide.

100.(New) The lamp of claim 99, wherein the electromagnetic energy within the waveguide comprises at least one resonant maximum, the energy feed being positioned at one of the at least one resonant maximum, the feedback mechanism being positioned to sample the resonant field, and the bulb cavity being positioned at one of the at least one resonant maximum.

101.(New) A lamp comprising:

an electromagnetic energy source;

an energy feed coupled to and receiving electromagnetic energy from the energy source;

a dielectric waveguide thermally isolated from the energy source and coupled to and receiving electromagnetic energy from the energy feed, said waveguide having a cavity and an electrically and thermally conductive outer coating the outer surface of the dielectric material except the surface defining the cavity; a thermal isolation layer lining the cavity; a bulb containing a material that produces light when excited by the electromagnetic energy, said bulb being disposed in the cavity, with the thermal isolation layer separating the bulb from the waveguide, and comprising a window, the window being transparent to the light, and an inner wall, the inner wall being hermetically coupled to the window shaped to direct the light towards the window, and having a thermal expansion coefficient approximately equal to the thermal expansion coefficient of the window, the window

and the inner wall defining an envelope in which the material is contained; and

a heat sink coupled to an outer surface of the waveguide.

102.(New) The lamp of claim 101, wherein the electromagnetic energy resonates within the waveguide and comprises at least one resonant maximum, the energy feed and the bulb cavity being proximate to the at least one resonant maximum.

103.(New) The lamp of claim 101, wherein the thermal isolation layer comprises a second dielectric material.

104.(New) A method for producing light comprising:

generating electromagnetic energy;

directing the electromagnetic energy into a dielectric waveguide having a cavity;

directing the electromagnetic energy into an envelope defined by the cavity and a window, the envelope containing a gas-fill; and

exciting the gas-fill into producing light.

105.(New) The method of claim 104 further comprising directing the produced light through the window.

106.(New) The method of claim 104, further comprising dissipating the heat generated by the plasma through the outer surface of the waveguide.

107.(New) The method of claim 104, comprising:

sampling the levels of electromagnetic energy within the waveguide; and

adjusting the frequency of the electromagnetic energy generated until the sampled electromagnetic energy is at a maximum.

108.(New) The method of claim 104, further comprising generating electromagnetic resonance within the waveguide.